

## Evaluation of salivary nickel level during orthodontic treatment

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**Introduction:** Several studies have confirmed that nickel is a toxic and carcinogenic metal. It is known as a strong sensitizer and considered as a common cause of metal induced allergic contact dermatitis. It is reported that gingival enlargement occurred commonly during orthodontic treatment. Since nickel is one of the most used metals in the construction of the orthodontic appliance, the aim of study was to evaluate the level of nickel released into the saliva of orthodontic patients.

**Method:** Non-stimulated saliva was collected from 18 patients attending The Orthodontic Clinic of Dental Faculty of Benghazi University. Age of patients ranged from 15 to 22 years, 94.4 % of them were females, all patients were non-smoker. Patients were divided into two groups; in first group conventional bracket system (discovery \* Roth 0.018", was used and the initial archwire used was rematitan \* "LITE" 0.014" both from DENTAURUM GmbH & Co. KG Turnstrabe 31, Germany). While, the second group used the nickel -free premium bracket system, and the initial archwire used was (Noninium \* Triple- strand twisted 0.015" Nickel free stainless steel archwires. Six samples were collected from each patient; at the first visit 2 samples (before and after bonding of bracket), at the second visit (2 weeks later) 2 other samples were collected (before and after inserting the archwire). The fifth and sixth samples were collected 4 and 8 weeks after applying the archwire respectively. The saliva samples were frozen at -20oC and level of nickel was determined by atomic absorption spectrophotometry.

**Results:** Nickel concentration values (mg/L) in first group prior to starting treatment were  $0.097 \pm 0.071$ . An increase in level of nickel was followed by decrease 4 and 8 weeks after applying the archwire ( $0.208 \pm 0.112$ ) and ( $0.077 \pm 0.056$  mg/L) respectively. Nickel levels in saliva of the second group were showed minimal variation and ranged from  $0.061 \pm 0.044$ mg/L to  $0.083 \pm 0.054$  throughout period of study.

**Conclusion:** It may be concluded that there could be a release of nickel from the appliance used in first group but it doesn't reach toxic level in saliva.

### Biography

Mudafara S. Bengleil, she achieved her Ph.D. degree in 2007 in toxicology, focused on heavy metals cytoprotective mechanism, from University of Nottingham, U.K. She was Dean of Faculty of Pharmacy, University of Benghazi and currently, she is Assistant Professor and Head, Department of Pharmacology and Toxicology, at the same faculty. Got her MSc in Pharmacology in 1994, joined the University of Benghazi and gained experience in teaching pharmacy students. She had international and national articles and abstracts in reputed journals and participated in several conferences.

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